

ABSTRACT

A method and apparatus of the invention are intended for determining characteristics of thin films, layers and coatings on under-layers and substrates when the films, layers and coatings have electrical characteristics measurably different from those of the under-layers and substrates. The method consists of selecting an object with an appropriate combination of a coating and substrate having different electrical characteristics, connecting one electrical contact to either the coating when the coating is more conductive than its substrate or to the substrate when the coating is less conductive than its substrate, connecting a second electrical contact to either the coating when the coating is conductive or to a conductive indenter when the coating is non-conductive, causing a relative movement between the indenter and the coating with application of an either constant or increasing force with simultaneous monitoring of electrical characteristics of the aforementioned circuit, until these characteristics change substantially and reach a critical level. The substantial changes in the electrical characteristics correspond to film or coating removal and exposure of the under-layer or substrate to the indenter. The characteristics of the thin films, layers and coatings are evaluated based on either critical load or distance or number of cycles corresponding to the substantial change in the electrical characteristics. The invention also relates to an apparatus for realization of the method.